California Environmental Protection Agency
AIR RESOURCES BOARD

EQUIPMENT AND PROCESS PRECERTIFICATION PROGRAM

EVALUATION OF THE AIR QUALITY PERFORMANCE CLAIMS FOR LASER TOUCH AND TECHNOLOGIES, LLC'S LASER TOUCH MODEL LT-B512

FEBRUARY 2002

California Air Resources Board
Precertification Program

Equipment:	**Laser Touch Model LT-B512**
Applicant:	**Laser Touch and Technologies, LLC** 3642 University Avenue Waterloo, Iowa 50701
Applicant Contact:	Mr. Nick Horan
Title:	President
Phone Number:	(319) 268-9826
E-mail:	lasertouch@LT-T.com
Website:	www.lt-t.com
Application Number:	02260101
Executive Order Number:	G-096-029-037
Executive Order Date:	February 15, 2002
Air Resources Board Contact:	Mr. Todd Sterling
Phone Number:	(916) 445-1034
E-mail:	tsterlin@arb.ca.gov
ARB's Precertification Website:	www.arb.ca.gov/eqpr/eqpr.htm

ABSTRACT

The purpose of this report is to document the California Air Resources Board's (ARB's) evaluation and verification of the air quality-related claims made by Laser Touch and Technologies, LLC (Laser Touch) for its Laser Touch Model LT-B512.

In an effort to make progress towards attaining healthy air quality in California, regulations restrict emissions of volatile organic compounds (VOCs) from a broad spectrum of activities. VOCs are emitted directly as by-products of combustion-related activities or as fugitive emissions from sources such as petro-chemical operations and solvent-containing products.

In an effort to slow the depletion of stratospheric ozone, the United States Environmental Protection Agency (U.S. EPA) administers several voluntary and regulatory programs covering the production, phaseout, recycling, handling, and substitution of stratospheric (upper-level) ozone-depleting substances.

The reduction of VOC emissions from all sources and the support of U.S. EPA's stratospheric ozone protection programs are part of California's clean air strategy to achieve and maintain healthy air quality in California.

As part of its Equipment and Process Precertification (Equipment Precertification) Program application package, Laser Touch requested that the ARB evaluate its proposed performance claim. When using Laser Touch Model LT-B512 with an Accuspray Model 19 high volume low pressure paint spray gun, in accordance with the Laser Touch manufacturer's instructions, the volume of a single-stage polyurethane enamel application was decreased by an average of 15 percent and therefore a corresponding volatile organic compound emissions reduction of an average 15 percent can be assumed

Upon successful completion of the requirements associated with the ARB's Equipment Precertification Program, a report is issued with two companion documents— an Executive Order issued by the ARB and a certificate issued by the California Environmental Protection Agency. These documents serve as official records that the ARB has independently verified the applicant's performance claims. Executive Orders issued under the ARB's Equipment Precertification Program are valid for three years from the date of issuance, provided that the holder complies with: 1) the terms and conditions identified in this report; and 2) the general requirements discussed in the Equipment Precertification Program Guidelines and Criteria.

After review of the documents discussed throughout this report, the ARB staff recommends that an Executive Order and a Precertification certificate be issued to the Laser Touch and Technologies, LLC's Laser Touch Model LT-B512.

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
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TABLE OF CONTENTS

Contents **Page 1**

TABLE OF CONTENTS

Contents **Page 2**

Appendices

I. INTRODUCTION

This report discusses the Laser Touch model LT-B512 manufactured by Laser Touch and Technologies, LLC, the performance claim to be verified by the Air Resources Board (ARB), the emissions testing results, and the findings and recommendations of the ARB staff concerning this technology.

This report is organized into several sections. The General Information section provides background information on the ARB's Equipment and Process Precertification (Precertification) Program. The next three sections (Summary of Scope, Statement of Claims, and Description of Technology) discuss the breadth of our evaluation, the performance claim, and a detailed description of the Laser Touch model LT-B512.

The Technical Evaluation and Evaluation of Claims sections present detailed information on our technical review and assessment of the Laser Touch model LT-B512. The Quality Management and Environmental Benefits sections provide supporting information on Laser Touch and Technologies LLC technology and a brief assessment of the potential environmental impacts of the technology.

The Recommendations section discusses the ARB staff's determination of the performance of the Laser Touch model LT-B512 relative to the company's claim. The Precertification Conditions section provides guidance with respect to the specific conditions that must be met for the certificate to remain valid for three years.

Appendix A contains the listing of the information that we relied upon to conduct our evaluation. The remaining appendices contain the detailed information that supports the evaluation in this report.

II. GENERAL INFORMATION

On June 14, 1996, the ARB adopted section 91400 of the California Code of Regulations, which included the Criteria for Equipment and Process Precertification. The regulation became effective on November 30, 1996.

Under this regulation, equipment or processes eligible for Precertification must: 1) have an air quality benefit; 2) be commonly-used or have the potential to be commonly-used in the near future (market ready); and 3) not pose a significant potential hazard to public health and safety and the environment. Furthermore, applicants must demonstrate that they have sufficient control over the manufacturing of the equipment or process to ensure that they can consistently and reliably produce equipment that performs at least as well as that considered in this evaluation.

A. ARB's Equipment Precertification Program Background

Under the Equipment Precertification Program, manufacturers request that the ARB conduct an independent third-party verification of performance claims which focus on the air quality benefits of its equipment or process. If the

claims are verified, the manufacturer is free to refer to the results of the ARB staff's evaluation in its marketing literature. Upon successful completion of the verification process, the ARB staff notify air pollution control and air quality management districts (Districts) in California of its determination. As a result of the ARB's notification, Districts have an advance opportunity to become familiar with the performance of the equipment or process.

The ARB received a request from Laser Touch and Technologies, LLC that the ARB staff determine if the Laser Touch model LT-B512 was eligible for the Equipment Precertification program. After receiving confirmation from the ARB staff that the Laser Touch model LT-B512 was eligible for the program, Laser Touch and Technologies, LLC submitted a Precertification application package. As part of its review of the application package, the ARB staff evaluated the results of emissions testing programs, and other information concerning the performance of the Laser Touch model LT-B512 to determine whether the claim was verifiable.

B. Relationship to Air Quality

The reduction of volatile organic compound (VOC) emissions from a broad spectrum of activities is part of California's strategy to achieve and maintain healthful air quality. The ARB staff evaluated the ability of the Laser Touch model LT-B512 when attached to a high volume low pressure (HVLP) spray gun to assist painters in reducing paint usage, and thus VOC emissions.

1. VOC Emissions

VOCs are emitted directly as by-products of incomplete combustion or as fugitive emissions from sources such as painting operations. Painting operations may include automotive and woodworking refinishing; architectural coating; and metal parts and products coating.

Through a series of complex reactions, VOCs function as chemical precursors to the formation of tropospheric (ground-level) ozone. Repeated exposure to ozone may cause permanent damage to the lungs. Even at relatively low concentrations, ozone triggers a variety of health problems including chest pains, coughing, nausea, throat irritation, and congestion. It can also worsen bronchitis, heart disease, emphysema, asthma, and reduce lung capacity. Ozone interferes with the ability of plants to produce and store food, making them more susceptible to disease, insects, and other pollutants.

2. Control of VOC Emissions from Painting Operations

District rules and regulations require emission limits, best available control technology, and inspection schedules to reduce fugitive VOC emissions from commercial painting operations. Some Districts have specific daily, monthly, or annual VOC emission limits for permitted coating operations that, if exceeded, may trigger the requirements for emissions offsets. For example, the San Joaquin Valley Unified Air Pollution Control District's Rule 2201, section 4.5.3 Table 4-1, sets the quantity of VOC emissions that would trigger the requirement for

offsets at 20,000 pounds/VOC per year, while the South Coast Air Quality Management District's level is 4 tons per year.

The options for controlling VOC emissions from commercial painting operations include the use of compliant paints; approved cleaning devices, paint spray booth with filters; add-on air pollution control equipment; and approved paint application devices, such as HVLP spray guns.

An HVLP spray gun operates at a constant high volume of air at low pressure (under 10 pounds per square inch) to atomize the applied coating. Atomizing the coating decreases the bounce-back and blow-by of the coating during the application process. The increased efficiency at which the coating is applied to the target surface reduces the use of paint and thus its associated emissions.

C. Health and Environmental Impacts

As part of its evaluation, the ARB staff conducted a cursory review of the potential health and environmental impacts associated with the Laser Touch model LT-B512. Based on the review of the information in the Laser Touch model LT-B512 Precertification Program application, the ARB staff concluded that the Laser Touch model LT-B512 would not likely present health impacts significantly different from those associated with air pollution control equipment which are currently in wide use for painting operations throughout California.

Please note that Laser Touch and Technologies, LLC, its distributors, and/or operators of the Laser Touch model LT-B512 are required to meet all applicable federal, state, and local laws, rules and regulations with respect to the manufacture, operation, maintenance, sale, and disposal of the Laser Touch model LT-B512.

D. Manufacture/Ownership Rights

The recommendations in this report are contingent upon Laser Touch and Technologies, LLC having the legal rights to produce and/or market the Laser Touch model LT-B512. Laser Touch and Technologies, LLC documented its ownership of these rights in its application package to the ARB, dated August 16, 2001.

III. SUMMARY OF SCOPE

Laser Touch and Technologies, LLC claims that a Laser Touch model LT-B512 attached to a HVLP spray gun can assist painters in reducing the volume of paint used, therefore VOC emission reductions can be assumed.

IV. STATEMENT OF CLAIMS

The following is the claim verified by the ARB staff concerning the Laser Touch and Technologies, LLC 's Laser Touch model LT-B512. The verification of this claim is predicated on the presumption that the Laser Touch model LT-B512 is manufactured, operated, maintained, sold, and disposed of in accordance with manufacturer's instructions.

When using Laser Touch Model LT-B512 with an Accuspray Model 19 high volume low pressure paint

spray gun, in accordance with the Laser Touch manufacturer's instructions, the volume of a single-stage polyurethane enamel application was decreased by an average of 15 percent and therefore a corresponding volatile organic compound emissions reduction of an average 15 percent can be assumed.

V. DESCRIPTION OF TECHNOLOGY

A. Laser Touch Model LT-B512

Laser Touch model LT-B512 is an add-on component for paint spray guns. The Laser Touch model LT-B512 is an optical device that assists painters in identifying the ideal gun-to-target paint application distance. Appendix B contains a schematic for the Laser Touch model LT-B512.

The Laser Touch model LT-B512 contains a diode laser, beam splitter, and a reflecting mirror to generate a reference beam and a gauge beam. The reference beam transmits in a fixed forward direction, but the gauge beam is redirected by adjusting the attitude of the reflecting mirror. The reference beam and the gauge beam intersect at a convergence point, which can be repositioned to a selected distance from the nozzle of the spray painting system by adjusting the path of the gauge beam. The painter can identify the ideal gun-to-target paint application distance by locating the convergence point on the surface being painted.

The Laser Touch model LT-B512 weighs 4.1 ounces and can be attached to paint spray guns. The device is 2 inches (in.) high, 0.75 in. wide, and 4.5 in. long and operates on a single AA lithium 3.6 volts battery. The manufacturer claims that the laser component of the Laser Touch model LT-B512 has an operating life of approximately 12 years of continuous use.

VI. TECHNICAL EVALUATION

A. Description of Emissions Testing

In October 1999, a testing program was conducted to evaluate the transfer efficiency of the Laser Touch model LT-B512. The test was conducted at the Iowa Waste Reduction Center's (IWRC) Painting and Coating Compliance Enhancement facility. Testing, processing, and laboratory analyses were performed by IWRC staff under the direction and observation of staff of the United States Environmental Protection Agency (U.S. EPA) Environmental Technology Verification (ETV) Program. The testing, processing, analyses, and calculations were performed in accordance with ASTM Method D 5286-95 Standard Test Methods for Determination of Transfer Efficiency Under General Production Conditions for Spray Application of Paints. (Appendix C contains detailed information about the coating used in the test program. Appendix D contains detailed information about the test results.)

The testing program included locally-recruited painters who had varying levels of experience and training on the use of HVLP spray guns but no training or experience on use of the Laser Touch model LT-B512. All painters used an Accuspray model 19

HVLP spray gun equipped with a 0.036 in. fluid tip, a 0.036 in. fluid needle, and a number 7 air cap.

The painters were first asked to coat uniform, solid test parts without the assistance of the Laser Touch model LT-B512 (Unassisted Run.) The painters were then given the opportunity to practice with the spray gun and coating in order to become accustomed to the characteristics of the Laser Touch model LT-B512 targeting device. The practice session did not attempt to correct the painters' form or their application method, but rather to provide them with the information necessary to interpret the visual feedback provided by the device. The painters were then asked to coat the same type of parts assisted by the Laser Touch model LT-B512 (Assisted Run.) The parts coated during the Unassisted Run were checked for the same performance criteria as the parts coated during the Assisted Run.

Laser Touch and Technologies, LLC selected Sherwin-Williams Polane HS Plus white single stage polyurethane enamel as the test coating. The coating was mixed 3:1:0.48 with Sherwin-Williams Catalyst V66V55 and Sherwin-Williams Reducer MAKR6K30. The coating was analyzed for viscosity, temperature, density, and solids.

Upon completion of pretreatment, parts were stored until they were needed for testing. The parts were then engraved with an identification number, weighed, and suspended from the conveyor pending transfer into the wet spray booth. Each part was stationary in the wet spray booth while the painter applied the coating. The paint was generally applied in one coat, but a few painters used a second coat applied in a pattern that was 90 degrees from the first (cross hatch).

The processed parts were moved to the cure oven and force-cured at approximately 80 degrees Celsius for a total of 94 minutes in two stages.

Several process conditions and operational parameters were monitored by the IWRC during the test program. The process conditions were factory and spray booth relative humidity, factory and spray booth temperature, spray booth average air velocity, and average part temperature. The operational parameters were average dynamic input air pressure, average output air pressure at the cap, and average distance to the target.

B. Description of Test Results

The staff of the ARB's Monitoring and Laboratory and Stationary Source Divisions evaluated the results of the testing program submitted by the IWRC.

As shown in Table D-3 of Appendix D, paint usage and VOC reductions were calculated for the Unassisted and Assisted runs. As shown in Table D-4 of Appendix D, the average paint reduction was 15 percent or 0.03 gallons per run. The paint usage reduction corresponds to an average of 15 percent or 0.09 pounds reduction of VOC emissions.

C. Site Visit

As part of our evaluation, we contacted current users of the Laser Touch model LT-B512. One customer was LuminOre, Incorporated of Vista, California where the Laser Touch model LT-B512 was used in the application of various metallic coatings on a wide variety of substrates. These users indicated that they have been pleased with the performance of the Laser Touch model LT-B512 as an assistive device for applying coatings.

VII. EVALUATION OF CLAIMS

This section presents additional information relating to the claim verified by the ARB staff as part of this evaluation report. Our verification of this claim is based on our evaluation of the information listed in Appendix A. As stated earlier, the ARB staff's evaluation and recommendations presented in this report are predicated on the expectation that the Laser Touch model LT-B512 is manufactured, sold, used, and maintained in accordance with manufacturer's instructions.

The claim language is precise because it directly correlates with the supporting documentation included with the application package. Below the claim are supporting comments, which may be used to interpret the significance of the claim verified in this report. To assist the reader, the claim is displayed in bold text.

When using Laser Touch Model LT-B512 with an Accuspray Model 19 High Volume Low Pressure paint spray gun, in accordance with the Laser Touch manufacturer's instructions, the volume of a single-stage polyurethane enamel application was decreased by an average of 15 percent therefore a corresponding volatile organic compound emissions reduction of an average 15 percent can be assumed.

It should be noted that this device is effective at reducing VOC emissions only to the extent to which a painter provides corrective action in response to the assistive feedback of the Laser Touch model LT-B512.

VIII. QUALITY MANAGEMENT

A. Practices and Standards

The Laser Touch model LT-B512 is manufactured exclusively by Laser Touch and Technologies, LLC at their manufacturing facility in Waterloo, Iowa. Laser Touch and Technologies, LLC 's quality management practices and standards for the Laser Touch model LT-B512 are described in detail in the Laser Touch and Technology, Total Quality Management Manual.

Except for the laser module, every component used in the manufacturing of the Laser Touch model LT-B512 is custom made or machined. The laser module is custom ordered from a source-specific vendor (see Diagram E-1, Appendix E). Each component is analyzed at the manufacturing facility for a variety of parameters, including laser output and mechanical and electrical integrity. If a component does not meet Laser Touch and Technologies, LLC 's specifications, it is either shipped back to the vendor or remanufactured. Once a component

has been qualified, it is placed in inventory and stored until needed.

The manufacturing process of the Laser Touch model LT-B512 involves a specific sequence of assembly instructions and standards. Mechanical and electrical procedures are incorporated into each sequence. The final inspection contains a series of enforced standards. The inspection adheres to the U.S. Department of Health and Human Services Food and Drug Administration's (FDA) specifications for lasers.

Data sheets throughout each sequence are retained in a workbook at the facility and entered into a computer database for future reference. The data sheet records the inventory, component performance, and other quality assurance measurements. The data sheets and quality assurance measurements are reviewed, and once it is determined that the Laser Touch model LT-B512 meets Laser Touch and Technologies, LLC specifications, it is released for sale.

The ARB staff reviewed the Laser Touch and Technologies, LLC quality management practices and standards as a part of the evaluation of the Laser Touch Model LT-B512. As a result of the review, the ARB staff has determined that the quality management program is sufficiently comprehensive to support precertifying the Laser Touch Model LT-B512.

B. Other Certifications/Approvals

The Laser Touch model LT-B512 meets all FDA requirements for a Class III A Laser. The U.S. EPA's ETV Program has verified the results of the test program evaluated by the ARB staff in this precertification.

C. User Manuals/Assembly Instructions

The recommended practices for use and assembly of the Laser Touch model LT-B512 are contained in Operator's Manual: Laser Touch Model no. LT-B512. This document, available at www.lt-t.com, is provided to distributors and users of the Laser Touch model LT-B512. The document provides a description of assembly, recommended usage/handling, maintenance, safety, and trouble shooting. In addition, the website includes updates and tips regarding the operation and advancement of the Laser Touch model LT-B512.

D. Operator Requirements

The Laser Touch model LT-B512 is sold in the United States by distributors or by Laser Touch and Technologies, LLC sales representatives. Laser Touch and Technologies, LLC trains its distributors and sales representatives about the product and its application. The distributors or sales representatives assist customers in determining whether the Laser Touch model LT-B512 will be effective for specific applications. Distributors in some cases may also provide equipment and operators to demonstrate the Laser Touch model LT-B512.

In order to achieve optimal performance, customers must abide by the manufacturers' recommendations

for assembly and operation of the Laser Touch model LT-B512.

E. Warranties

Laser Touch and Technologies, LLC will replace any Laser Touch model LT-B512 product that does not meet manufactured assembly and operating parameters within 90 days of delivery from a Laser Touch and Technologies, LLC facility.

IX. ENVIRONMENTAL BENEFITS

As part of our review, we evaluated the potential air quality impacts of the Laser Touch model LT-B512. The use of the Laser Touch model LT-B512 as an assistive device for an HVLP paint spray gun, in accordance with manufacturer's instructions, has the potential to reduce VOC emissions.

It should be noted that under certain conditions, emissions reductions resulting from the use of the Laser Touch LT-B512 (eg., automotive refinishing operations) may be eligible for emission reduction credits. Eligibility requirements for emission reduction credits include quantifiable, enforceable, and real reductions of VOC's. Individual air districts in California should be consulted to determine potential eligibility for any emission reduction credits.

X. ARB'S RECOMMENDATIONS

After evaluating the information discussed in this report, the ARB staff recommends that the Laser Touch model LT-B512 be Precertified under its Precertification Program. Specifically, we have independently verified the claim of Laser Touch and Technologies, LLC concerning its Laser Touch model LT-B512 as presented in the claims section of the report.

By accepting Precertification under the ARB's program, Laser Touch and Technologies, LLC assumes, for the duration of the three-year Precertification period, responsibility for maintaining the quality of the manufactured equipment and materials at a level equal to or better than was provided to obtain this Precertification. Precertification under the ARB's program is also contingent on the recipient agreeing to be subject to quality monitoring by the ARB, as provided by law.

The ARB makes no express or implied warranties as to the performance of the manufacturer's product or equipment. Nor does the ARB warrant that the manufacturer's product or equipment is free from any defects in workmanship or material caused by negligence, misuse, accident, or other causes. The ARB staff believes, however that Laser Touch and Technologies, LLC's Laser Touch model LT-B512 will achieve the performance levels presented in the claims section of this report. Our determination is based on our evaluation of the data submitted by Laser Touch and Technologies, LLC, as well as the other information identified in this report. Our recommendations are predicated on the expectation that assembly and application are performed in accordance with the manufacturer's instructions contained in the document

entitled Operator's Manual: Laser Touch Model no. LT-B512.

XI. PRECERTIFICATION CONDITIONS

The recommendations in this report are conditional upon the Laser Touch model LT-B512 being manufactured, operated, maintained, sold, and disposed of in accordance with manufacturer's instructions contained in the document entitled Operator's Manual: Laser Touch Model no. LT-B512. A copy of this document must be provided to each distributor and user of the Laser Touch model LT-B512, prior to its use for any paint spraying operation. In order for the Precertification to remain valid, Laser Touch and Technologies, LLC must retain the manufacturing rights for the Laser Touch model LT-B512.

Precertification does not relieve the person constructing, installing or operating the equipment at each specific site from the requirement to obtain an authority to construct and permit to operate. Precertification does not relieve the person from compliance with any local air district rules or regulations.

Any manufacturer's modification that affects the claimed performance or emissions of the Laser Touch Model LT-5B12 shall void this Precertification. This Precertification is only valid for the Laser Touch Model LT-B512 that was designed and tested for this evaluation.

APPENDIX A

MATERIALS AVAILABLE FOR EVALUATION

MATERIALS AVAILABLE FOR EVALUATION

1. Letter from Mr. Richard J. Klein of the Iowa Waste Reduction Center to Ms. Tam Doduc of the Air Resources Board's (ARB) Office of Environmental Technology requesting determination of eligibility of the Laser Touch™ coating application technology for the ARB Equipment Precertification Program, January 26, 2001 (received by ARB on February 6, 2001).

2. Memorandum from Ms. Tam Doduc of the ARB's Office of Environmental Technology to Mr. Todd Wong of the ARB's Stationary Source Division notifying him of the need to discuss the eligibility of the Laser Touch™ coating application technology for the ARB Equipment Precertification Program, February 20, 2001 (received by the ARB on February 26, 2001).

3. Memorandum from Mr. Todd Wong of the ARB's Stationary Source Division to Ms. Tam Doduc of the ARB's Office of Environmental Technology confirming that the ARB had received the Eligibility Request forms from Laser Touch & Technologies, Inc., March 1, 2001.

4. Letter from Ms. Tam Doduc of the ARB's Office of Environmental Technology to Mr. Richard J. Klein of the Iowa Waste Reduction Center notifying him that the Laser Touch™ coating application technology is eligible to participate in the California Environmental Technology Certification Program, March 14, 2001 (received by the ARB on March 21, 2001).

5. Letter from Mr. Richard J. Klein of the Iowa Waste Reduction Center to Ms. Tam Doduc of the ARB's Office of Environmental Technology providing supplemental information for the Laser Touch™ coating application technology, January 26, 2001 (received by the ARB on April 25, 2001).

6. Memorandum from Ms. Tam Doduc of the ARB's Office of Environmental Technology to Mr. Todd Wong of the ARB's Stationary Source Division confirming they have received supplemental information for Laser Touch & Technologies' eligibility request, April 25, 2001.

7. Memorandum from Mr. Todd Wong of the ARB's Stationary Source Division to Ms. Tam Doduc of the ARB's Office of Environmental Technology verifying ARB will be the lead agency to review the performance claim of the Laser Touch™ coating application technology, May 15, 2001.

8. Letter from Ms. Tam Doduc of the ARB's Office of Environmental Technology to Mr. Nick R. Horan of Laser Touch and Technologies notifying him of the need to discuss next steps in the evaluation of the technology, May 16, 2001 (received by ARB on May 17, 2001).

9. Memorandum from Mr. Mike Tollstrup of the ARB's Stationary Source Division to Mr. George Lew of ARB's Monitoring and Laboratory Division requesting review of the test report, July 26, 2001.

10. Letter from Ms. Kitty Martin of the ARB's Stationary Source Division to Mr. Richard J. Klein of the Iowa Waste Reduction Center confirming that the ARB had received it's Eligibility Request and that the Laser Touch® System may be appropriate for precertification, July 30, 2001.

11. Letter from Mr. Nick Horan of Laser Touch and Technologies to Mr. Hafizur Chowdhury of the ARB's Stationary Source Division submitting an application for certification for the Laser Touch LT-B512, August 13, 2001 (received by the ARB on August 16, 2001.

12. Memorandum from Mr. George Lew of the ARB's Monitoring and Laboratory Division to Mr. Mike Tollstrup of the ARB's Stationary Source Division verifying the review of an "ETV Joint Verification Statement" and an associated "Environmental Technology Verification Report" for Laser Touch and Technologies, August 20, 2001.

13. Letter from Ms. Kitty Martin of the ARB's Stationary Source Division to Mr. Richard J. Klein of the Iowa Waste Reduction Center confirming that the ARB had received it's application package and application fee, and that the application was sufficiently complete, August 24, 2001.

14. Letter from Mr. Richard J. Klein of the Iowa Waste Reduction Center to Mr. Hafizur Chowdhury of the ARB's Stationary Source Division submitting the Quality Management manual for Laser Touch and Technologies, August 13, 2001 (received by the ARB on September 26, 2001).

15. State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA/ALAPCO). Air Quality Permits: A Handbook for Regulators and Industry, Volume II (May 30, 1991): 14-1 to 14-30.

16. National Defense Center for Environmental Excellence, prepared for the United States Environmental Protection Agency, "Environmental Technology Verification Report: Laser Touch and Technologies, LLC, Laser Touch™ Model LT-B512", (May 2000).

APPENDIX B

LASER TOUCH MODEL LT-B512 DESIGN SCHEMATICS

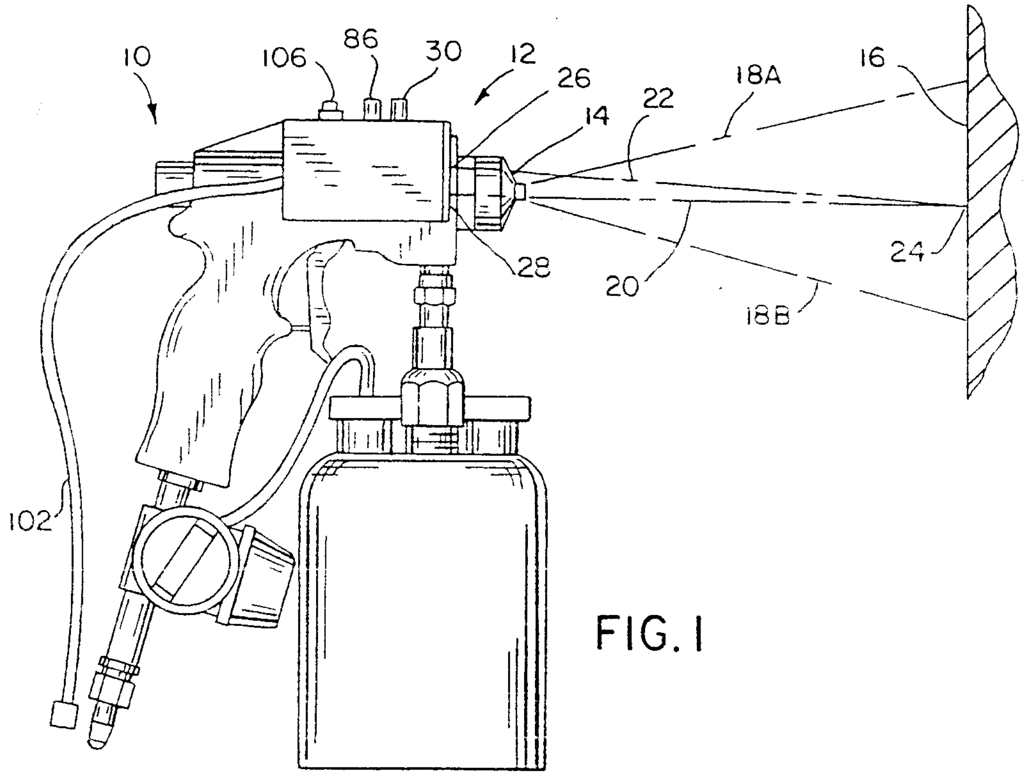
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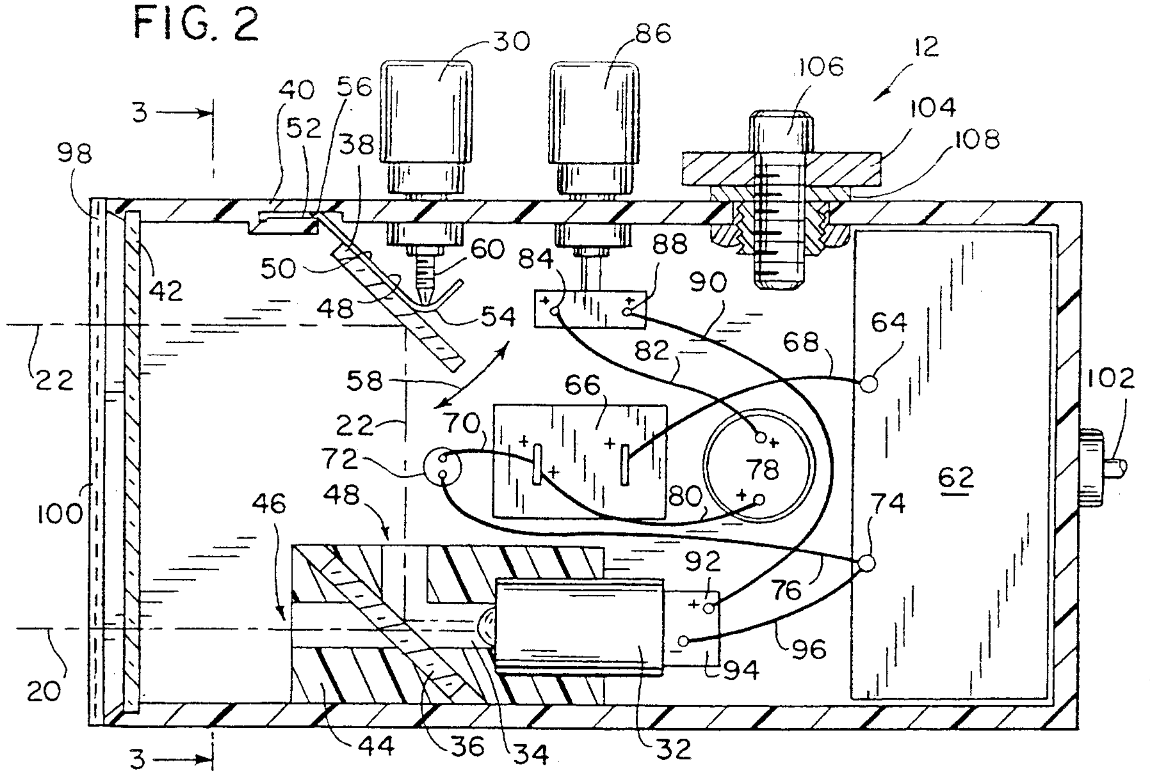
FIG. 1

FIG. 2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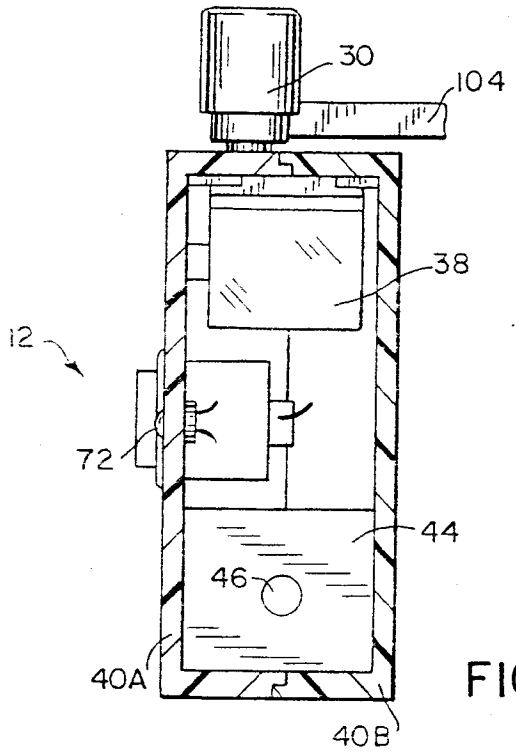
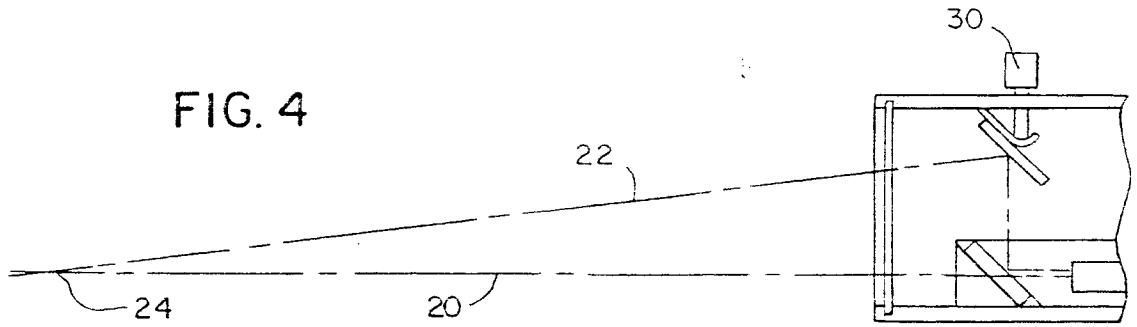


FIG. 3

FIG. 4



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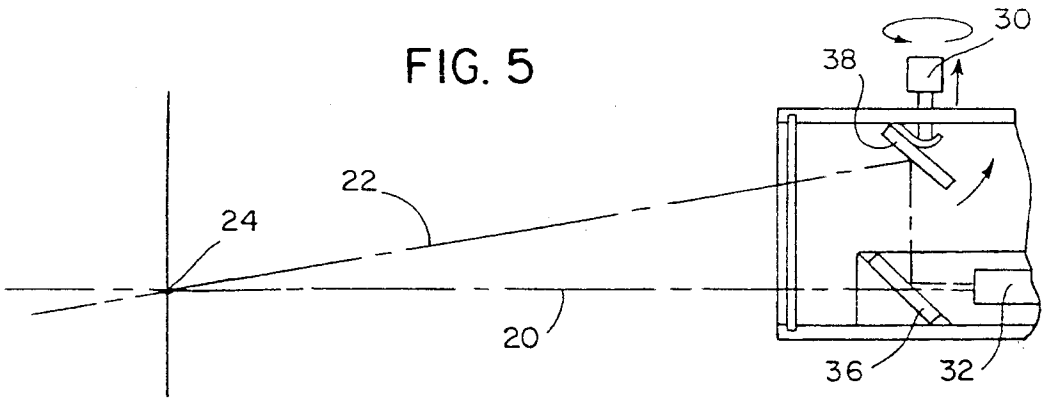

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APPENDIX C

SHERMAN-WILLIAMS MATERIAL SAFETY DATA SHEETS

Section 3 — Physical Data

PRODUCT WEIGHT	See TABLE	*EVAPORATION RATE*	Slower than Ether
SPECIFIC GRAVITY	1.05-1.47	*VAPOR DENSITY*	Heavier than Air
BOILING RANGE	133-360°F	*MELTING POINT*	N.A.
VOLATILE VOLUME	12-100 %	*SOLUBILITY IN WATER*	N.A.

Section 4 — Fire And Explosion Hazard Data

FLAMMABILITY CLASSIFICATION See TABLE *FLASH POINT* See TABLE *LEL* 1.7 *UEL* 12.6

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS

Keep containers tightly closed. Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 5 — Health Hazard Data

ROUTES OF EXPOSURE

Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. Follow recommendations for proper use, ventilation, and personal protective equipment to minimize exposure.

ACUTE Health Hazards

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

May cause allergic respiratory and/or skin reaction in susceptible persons or sensitization. This effect may be delayed several hours after exposure.

EMERGENCY AND FIRST AID PROCEDURES

If INHALED: If any breathing problems occur during use, LEAVE THE AREA and get fresh air. If problems remain or occur later, IMMEDIATELY get medical attention.

If on SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use. Get medical attention.

If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

If SWALLOWED: Get medical attention.

CHRONIC Health Hazards

Carbon Black is classified by IARC as possibly carcinogenic to humans (Group 2B) based on experimental animal data, however, there is insufficient evidence in humans for its carcinogenicity.

Crystalline Silica (Quartz, Cristobalite) is listed by IARC and NTP. Long term exposure to high levels of silica dust, which can occur only when sanding or abrading the dry film, may cause lung damage (silicosis) and possibly cancer.

Methyl Ethyl Ketone may increase the nervous system effects of other solvents.

Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver, urinary, blood forming and reproductive systems.

Persons sensitive to isocyanates will experience increased allergic reaction on repeated exposure.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Section 6 — Reactivity Data

STABILITY - Stable

CONDITIONS TO AVOID

Contamination with Water, Alcohols, Amines and other compounds which react with isocyanates, may result in dangerous pressure in, and possible bursting of, closed containers.

INCOMPATIBILITY

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Nitrogen, possibility of Hydrogen Cyanide

HAZARDOUS POLYMERIZATION — Will Not Occur

Section 7 — Spill Or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate the area. Remove with inert absorbent

WASTE DISPOSAL METHOD

Waste from these products may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers. Waste from products containing Methyl Ethyl Ketone may also require extractability testing.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

Section 8 — Protection Information

PRECAUTIONS TO BE TAKEN IN USE

NO PERSON SHOULD USE THESE PRODUCTS, OR BE IN THE AREA WHERE THEY ARE BEING USED IF THEY HAVE CHRONIC (LONG-TERM) LUNG OR BREATHING PROBLEMS OR IF THEY EVER HAD A REACTION TO ISOCYANATES.

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

These coatings may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg./m3 (total dust), 3 mg./m3 (respirable fraction), OSHA PEL 15 mg./m3 (total dust), 5 mg./m3 (respirable fraction).

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

Where overspray is present, a positive pressure air supplied respirator (TC19C NIOSH/MSHA approved) should be worn. If unavailable, a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2 may be effective. Follow respirator manufacturer's directions for use. Wear the respirator for the whole time of spraying and until all vapors and mists are gone. NO PERSONS SHOULD BE ALLOWED IN THE AREA WHERE THIS PRODUCT IS BEING USED UNLESS EQUIPPED WITH THE SAME RESPIRATOR PROTECTION RECOMMENDED FOR THE PAINTERS.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

EYE PROTECTION - Wear safety spectacles with unperforated sideshields.

OTHER PROTECTIVE EQUIPMENT — Use barrier cream on exposed skin.

Section 9 — Precautions

SOL STORAGE CATEGORY - See TABLE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively. During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

OTHER PRECAUTIONS

These products must be mixed with other components before use. Before opening the packages, READ AND FOLLOW WARNING LABELS ON ALL COMPONENTS.

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 10 — Other Regulatory Information

CALIFORNIA PROPOSITION 65

WARNING: F63B211 contains a chemical known to the State of California to cause cancer. R7K11 and V65V55 contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION

All chemicals in these products are listed, or are exempt from listing, on the TSCA Inventory.

The above information pertains to these products as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to these products may substantially alter the composition and hazards of the products. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

97

— Section 1 —
Product Identification

Material Safety Data Sheet

The Sherwin-Williams Co.
101 Prospect Ave. N.W.
Cleveland, OH 44115

Emergency telephone number (216) 566-2917
Information telephone number (216) 566-2902
Date of preparation September 1, 1997

POLANE® Reducers

SOL-POL

CAS No.	— Section 2 — Hazardous Ingredient (percent by weight)	ACGIH TLV <STEL>	OSHA PEL <STEL>	Units	Vapor Pressure (mm Hg)	MAK R6 K 90	Cyclohexanone R6K32	K69 Thinner R7 K 69	K84 Thinner R7 K 84	K94 Thinner R7 K 94	Retarder R7 K 216	Reducer R7 K B29	Reducer R7 K B60
						YES		530YES-2138 530-2146 530-2647	530YES-2158 530-2161 530-2652	530YES-2179 530-2187 530-2666	YES	yes	
108-88-3 §	Toluene.	50	100 <150>	PPM (Skin)	22.0			15	20	20		12	
100-41-4 §	Ethylbenzene	100 <125>	100 <125>	PPM	7.1			9				1	
1330-20-7 §	Xylene.	100 <150>	100 <150>	PPM	5.9			52			4	7	
78-93-3 §	Methyl Ethyl Ketone.	200 <300>	200 <300>	PPM	70.0					25		59	21
108-10-1 §	Methyl Isobutyl Ketone.	50 <75>	50 <75>	PPM	16.0			24					
110-43-0	Methyl n-Amyl Ketone.	50	100	PPM	2.1	100							35
108-94-1	Cyclohexanone	25	25	PPM (Skin)	2.0		100				71	6	
108-21-4	Isopropyl Acetate.	250 <310>	250 <310>	PPM	47.5				38	27			22
123-86-4	n-Butyl Acetate.	150 <200>	150 <200>	PPM	10.0				45	28	24	15	22
	Weight per Gallon (lbs.)					6.76	7.86	7.04	7.25	7.09	7.68	6.92	6.96
	VOC (Volatile Organic Compounds) - lbs./gal.					6.76	7.86	7.03	7.25	7.09	7.68	6.92	6.96
	Photochemically Reactive					No	No	Yes	No	No	No	No	No
	Flash Point (°F)					100	111	35	35	21	92	30	30
	DOL Storage Category					2	2	1B	1B	1B	1C	1B	1B
	Flammability Classification (Flammable - Combustible)					Combustible	Combustible	Flammable	Flammable	Flammable	Flammable	Flammable	Flammable
	HMIS (NFPA) Rating (health - flammability - reactivity)					2 2 0	2 2 0	2 3 0	2 3 0	2 3 0	3 3 0	3 3 0	2 3 0

PERCENT BY WEIGHT

§ Ingredient subject to the reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313, 40 CFR 372.65 C

→→→ MSDS Text Page Follows →→→

POLANE® Reducers

SOL-POL

Section 3 — Physical Data

PRODUCT WEIGHT	See TABLE	EVAPORATION RATE	Slower than Ether
SPECIFIC GRAVITY	0.81-0.95	VAPOR DENSITY	Heavier than Air
BOILING RANGE	174-320 °F	MELTING POINT	N.A.
VOLATILE VOLUME	100 %	SOLUBILITY IN WATER	N.A.

Section 4 — Fire And Explosion Hazard Data

FLAMMABILITY CLASSIFICATION *FLASH POINT* See TABLE LEL 1.0 UEL 10.0
See TABLE

EXTINGUISHING MEDIA
Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS
Keep containers tightly closed. Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES
Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 5 — Health Hazard Data

ROUTES OF EXPOSURE
Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

ACUTE Health Hazards

EFFECTS OF OVEREXPOSURE
Irritation of eyes, skin and respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE
Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.
Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
None generally recognized.

EMERGENCY AND FIRST AID PROCEDURES

If INHALED:	If affected, remove from exposure. Restore breathing. Keep warm and quiet.
If on SKIN:	Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
If in EYES:	Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED:	Never give anything by mouth to an unconscious person. DO NOT INDUCE VOMITING. Give conscious patient several glasses of water. Seek medical attention.

CHRONIC Health Hazards

No ingredient in these products is an IARC, NTP or OSHA listed carcinogen.
Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.
Prolonged overexposure to solvent ingredients in the following products may cause adverse effects to organ systems:

* *Cyclohexanone & Methyl Amyl Ketone*	liver, urinary
* *K69 Thinner*	liver, urinary, cardiovascular, reproductive
* *R7KB50 & Retarder R7K216*	liver, urinary, blood forming, reproductive
* *R7KB29, K84 Thinner & K94*	liver, urinary, blood forming, cardiovascular, reproductive

Section 6 — Reactivity Data

STABILITY — Stable

CONDITIONS TO AVOID
None known.

INCOMPATIBILITY
None known.

HAZARDOUS DECOMPOSITION PRODUCTS
By fire: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION — Will Not Occur

Section 7 — Spill Or Leak Procedures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Remove all sources of ignition. Ventilate and remove with inert absorbent.

WASTE DISPOSAL METHOD
Waste from these products may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers. Waste from products containing Methyl Ethyl Ketone may also require testing for extractability.
Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and local regulations regarding pollution.

Section 8 — Protection Information

PRECAUTIONS TO BE TAKEN IN USE
Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

VENTILATION
Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section II is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION
If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section II.

PROTECTIVE GLOVES
Wear gloves which are recommended by glove supplier for protection against materials in Section II.

EYE PROTECTION
Wear safety spectacles with unperforated sideshields.

Section 9 — Precautions

DOL STORAGE CATEGORY — See TABLE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep away from heat, sparks, and open flame.
During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.
Consult NFPA Code. Use approved Bonding and Grounding procedures.
Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

OTHER PRECAUTIONS
Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 10 — Other Regulatory Information

CALIFORNIA PROPOSITION 65
WARNING: K69 Thinner, K84 Thinner, K94 Thinner and R7KB29 contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION
All chemicals in these products are listed, or are exempt from listing, on the TSCA Inventory.

The above information pertains to these products as currently formulated, and is based on the information available at this time. Addition of additives or other coatings materials to these products may substantially alter the composition and hazards of the products. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

FROM : SHERWIN-WILLIAMS CEDAR FALLS FAX NO. : 319 277 6277 Aug. 22 2001 11:11AM P1

Rick

MATERIAL SAFETY DATA SHEET

R&K30
05 00

Section 1 -- PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER

R&K30

HMIS CODES

Health	2
Flammability	3
Reactivity	0

PRODUCT NAME
Methyl Amyl Ketone

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
101 Prospect Avenue N.W.
Cleveland, OH 44115

EMERGENCY TELEPHONE NO.
(216) 566-2917

DATE OF PREPARATION
22-AUG-01

INFORMATION TELEPHONE NO.
(216) 566-2902

Section 2 -- COMPOSITION/INFORMATION ON INGREDIENTS

% by WT	CAS No.	INGREDIENT	UNITS	VAPOR PRESSURE
100	110-43-0	Methyl n-Amyl Ketone.		
		ACGIH TLV	50 ppm	2.14 mm
		OSHA PEL	100 ppm	

Section 3 -- HAZARDS IDENTIFICATION

ROUTES OF EXPOSURE

Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

CANCER INFORMATION

For complete discussion of toxicology data refer to Section 11.

Section 4 -- FIRST AID MEASURES

Continued on next

If INHALED:	If affected, remove from exposure. Restore breathing. Keep warm and quiet.
If on SKIN:	Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before reuse.
If in EYES:	Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED:	Do not induce vomiting. Get medical attention immediately.

Section 5 — FIRE FIGHTING MEASURES

FLASH POINT	LEL	UEL
100 F PMCC	1.1	7.9

FLAMMABILITY CLASSIFICATION

Combustible, Flash above 99 and below 200 F

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS

Keep containers tightly closed. Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 6 — ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate and remove with inert absorbent.

Section 7 — HANDLING AND STORAGE

DOL STORAGE CATEGORY

2

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Contents are COMBUSTIBLE. Keep away from heat and open flame.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

Section 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

Continued on page 3

VENTILATION
Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.
RESPIRATORY PROTECTION
If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section II.
When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.
PROTECTIVE GLOVES
Wear gloves which are recommended by glove supplier for protection against materials in Section 2.
EYE PROTECTION
Wear safety spectacles with unperforated sideshields.
OTHER PRECAUTIONS
Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 9 — PHYSICAL AND CHEMICAL PROPERTIES

PRODUCT WEIGHT	6.76 lb/gal 810 g/l
SPECIFIC GRAVITY	0.81
BOILING POINT	297 - 308 F 147 - 153 C
MELTING POINT	Not Available
VOLATILE VOLUME	100 %
EVAPORATION RATE	Slower than ether
VAPOR DENSITY	Heavier than air
SOLUBILITY IN WATER	N.A.

VOLATILE ORGANIC COMPOUNDS (VOC Theoretical)
6.76 lb/gal 810 g/l Less Federally Exempt Solvents
6.76 lb/gal 810 g/l Emitted VOC

Section 10 — STABILITY AND REACTIVITY

STABILITY — Stable
CONDITIONS TO AVOID
None known.
INCOMPATIBILITY
None known.
HAZARDOUS DECOMPOSITION PRODUCTS
By fire: Carbon Dioxide, Carbon Monoxide
HAZARDOUS POLYMERIZATION
Will not occur

Section 11 — TOXICOLOGICAL INFORMATION

CHRONIC HEALTH HAZARDS
No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.
Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver and urinary systems.
Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

TOXICOLOGY DATA

Continued on page 4

CAS No.	Ingredient Name				
110-43-0	Methyl n-Amyl Ketone.				
		LC50	RAT	4HR	Not Established
		LD50	RAT		1670 mg/kg

Section 12 -- ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

No data available.

Section 13 -- DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

Section 14 -- TRANSPORT INFORMATION

No data available.

Section 15 -- REGULATORY INFORMATION

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element

No ingredients in this product are subject to SARA 313 (40 CFR 372.65C) Supplier Notification.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

Section 16 -- OTHER INFORMATION

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

SHERWIN WILLIAMS CHEMICAL COATINGS

CC-D2(

POLANE® HS Plus Polyurethane Ename

Black	F63B80	Red Oxide	F63R64	White	F63W66
Orange	F63E51	Magenta	F63R65	Hi Hide Opaque Yellow GS	F63Y63
Green	F63G62	Brite Red	F63R66	Hi Hide Organic Yellow RS	F63Y65
Blue	F63L63	Silver	F63S65	Yellow Oxide	F63Y66
Hi Hide Organic Red	F63R62	Clear	F63V67	Catalyst	V66V55

DESCRIPTION

POLANE® HS Plus Polyurethane Enamel is a two component coating providing high gloss, excellent exterior durability and resistance properties along with high volume solids and 2.8 VOC compliance. The single pigment colors are designed for intermixing to achieve great versatility in color matching capability.

Advantages:

- Under 2.8 VOC with Polane HS Plus Catalyst V66V55
- Excellent exterior color and gloss retention with V66V55 catalyst
- Excellent exterior physical and chemical performance properties
- Excellent appearance over many types of metal and plastic substrates
- Ideal coating for machine tool industry with resistance to most lubricants and cutting oils
- High solids - high spreading rate
- Air dry or force dry curing
- Full range of colors may be custom blended
- Excellent hardness and impact resistance
- Excellent mar and abrasion resistance
- Apply by conventional, airless, air assisted airless, HVLP or electrostatic spray
- Much faster drying times acheived with the use of infratherm type ovens
- For interior use, Polane HS Plus may be catalyzed 2:1 with Polane Plus Catalyst V66V44 and reduced 24% MAK
- Free of lead and chromate hazards

CHARACTERISTICS

Gloss: Full, 90+ units
Volume Solids: 59 ± 2%
catalyzed and reduced, may vary by color
Viscosity: catalyzed and reduced
18-27 seconds #3 Zahn Cup
Recommended film thickness:
Mils Wet: 2.0 - 2.5 Mils Dry: 1.25 - 1.5
Spreading Rate (no application loss)
@ 1 mil dft: 640-960 sq ft/gal
Air Drying (1.5 mils dft, 77°F, 50% RH):

To Touch:	1-1½ hours
To Handle:	10-12 hours
Tack Free:	8 hours
To Recoat:	5-8 hours
Force Dry:	30-60 min. at 140-160°F

Curing temperature must not exceed the heat distortion temperature of the plastic substrate.
Infratherm oven schedule to tack free: (Flash off 1 minute)
1.5 lb Gas: 3 min., 2.5 lb Gas: 7 min.
Mixing Ratio:

3 part	Polane HS Plus
1 part	Catalyst V66V55
0.48 part (12%)	MAK R6K30
Pot Life:	3 hours

Accelerated Drying:
Add up to .1 ounce of Polane Accelerator, V66VB11 per gallon of Polane HS Plus.

To Touch:	30-60 minutes
To Handle:	2-3 hours
Tack Free:	1-2 hours
To Recoat:	1-1½ hours
Force Dry:	30 min. at 140-160°F
Mixing Ratio:	
3 part	Polane HS Plus including Accelerator
1 part	Catalyst V66V55
0.48 part (12%)	MAK R6K30
Pot Life:	1 hour
Flash Point:	95°F Seta Flash Closed Cup
Package Life:	2 years, unopened

Air Quality Data:
Non-photochemically reactive
Volatile Organic Compounds (VOC)
as packaged, maximum
2.8 lb/gal, 336 g/L
catalyzed and reduced as above, maximum
2.8 lb/gal, 336 g/L
An Air Quality Data Sheet is available from your local Sherwin-Williams facility.

SPECIFICATIONS

General: Substrate should be free of grease, oil, dirt, fingerprints, drawing compounds, any contamination, and surface passivation treatments to ensure optimum adhesion and coating performance properties. Consult Metal Preparation Brochure CC-T1 for additional details.
Aluminum, untreated: Prime with Industrial Wash Primer, P60G2, or Kem Aqua Wash Primer, E61G520, followed by Polane Plus Sealer, E65A71 or 2.8 VOC Catalyzed Epoxy Primer, E61A280.
Galvanized Steel, untreated: Prime with Industrial Wash Primer, P60G2, or Kem Aqua Wash Primer, E61G520, followed by Polane Plus Sealer, E65A71 or 2.8 VOC Catalyzed Epoxy Primer, E61A280.
Plastic: Due to the diverse nature of plastic substrates, a coating or coating system must be tested for acceptable adhesion to the substrate prior to use in production. Reground and recycled plastics along with various fire retardants, flowing agents, mold release agents, and foaming/blowing agents will affect coating adhesion. A filler or primer/barrier coat may be required. Please consult your Sherwin-Williams Chemical Coatings Sales Representative for system recommendations.
Steel or Iron: Remove rust, mill scale, and oxidation products. For best results, treat the surface with a proprietary surface chemical treatment of zinc or iron phosphate to improve corrosion protection. For untreated metal: Prime with Industrial Wash Primer, P60G2, or Kem Aqua Wash Primer, E61G520, followed by Polane Plus Sealer, E65A71 or 2.8 VOC Catalyzed Epoxy Primer, E61A280.
For best corrosion resistance, prime treated steel with Polane Plus Sealer, E65A71 or 2.8 VOC Catalyzed Epoxy Primer, E61A280.
Wood (interior only): Must be clean, dry, and finish sanded. Seal with a full coat of Polane 2.8 Plus SprayFil, D61H75.

Testing: Due to the wide variety of substrates, surface preparation methods, application methods, and environments, the customer should test the complete system for adhesion and compatibility prior to full scale application.

continued on bac

POLANE® HS Plus Enamel

F63J

Section III — PHYSICAL DATA

PRODUCT WEIGHT — See TABLE
SPECIFIC GRAVITY — 0.8-1.4
BOILING RANGE — 321-395 °F
VOLATILE VOLUME — 32-100 %
EVAPORATION RATE — Slower than Ether
VAPOR DENSITY — Heavier than Air
MELTING POINT — N.A.
SOLUBILITY IN WATER — N.A.

Section IV — FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION — See TABLE   FLASH POINT — See TABLE   LEL 0.7   UEL 8.1

EXTINGUISHING MEDIA
Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS
Keep containers tightly closed. Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES
Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section V — HEALTH HAZARD DATA

ROUTES OF EXPOSURE
Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. Follow recommendations for proper use, ventilation, and personal protective equipment to minimize exposure.

ACUTE Health Hazards

EFFECTS OF OVEREXPOSURE
Irritation of eyes, skin and respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE
Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.
Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
May cause allergic respiratory and/or skin reaction in susceptible persons or sensitization. This effect may be delayed several hours after exposure.

EMERGENCY AND FIRST AID PROCEDURES
If INHALED: If any breathing problems occur during use, LEAVE THE AREA and get fresh air. If problems remain or occur later, IMMEDIATELY get medical attention.
If on SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED: Get medical attention.

CHRONIC Health Hazards
Toluene Diisocyanate (TDI), listed by NTP, has been shown to cause cancer in laboratory animals when administered directly into the stomach. No evidence of cancer from exposure to TDI by inhalation has been reported.
Prolonged overexposure to solvent ingredients in Section II may cause adverse effects to the liver, urinary, blood forming, cardiovascular, and reproductive systems.
Persons sensitive to isocyanates will experience increased allergic reaction on repeated exposure.
Methyl Ethyl Ketone may increase the nervous system effects of other solvents.
Rats exposed to titanium dioxide dust at 250 mg./m3 developed lung cancer, however, such exposure levels are not attainable in the workplace.
Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Section VI — REACTIVITY DATA

STABILITY — Stable
CONDITIONS TO AVOID
None known.
INCOMPATIBILITY
Contamination of Catalysts with Water, Alcohols, Amines and other compounds which react with isocyanates, may result in dangerous pressure in, and possible bursting of, closed containers.
HAZARDOUS DECOMPOSITION PRODUCTS
By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Nitrogen, possibility of Hydrogen Cyanide
HAZARDOUS POLYMERIZATION — Will Not Occur

Section VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Remove all sources of ignition. Ventilate the area.
For COLORS and REDUCER: Remove with inert absorbent.
For CATALYST: All personnel in the area should be protected as in Section VIII. Cover spill with absorbent material. Deactivate spilled material with a 10% ammonium hydroxide solution (household ammonia). After 10 minutes, collect in open containers and add more ammonia. Cover loosely. Wash spill area with soap and water.

WASTE DISPOSAL METHOD
Waste from these products may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers. Waste from products containing Methyl Ethyl Ketone may also require testing for extractability.
Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

Section VIII — PROTECTION INFORMATION

PRECAUTIONS TO BE TAKEN IN USE
NO PERSONS SHOULD USE THESE PRODUCTS, OR BE IN THE AREA WHERE THESE PRODUCTS ARE BEING USED, IF THEY HAVE CHRONIC (LONG-TERM) LUNG OR BREATHING PROBLEMS OR IF THEY EVER HAD A REACTION TO ISOCYANATES.
Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.
These coatings may contain materials classified as nuisance particulates (listed "as Dust" in Section II) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section II, the applicable limits for nuisance dusts are ACGIH TLV 10 mg./m3 (total dust), OSHA PEL 15 mg./m3 (total dust), 5 mg./m3 (respirable fraction).

VENTILATION
Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section II is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION
Where overspray is present, a positive pressure air supplied respirator (TC19C NIOSH/MSHA approved) should be worn. If unavailable, a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section II may be effective. Follow respirator manufacturer's directions for use. Wear the respirator for the whole time of spraying and until all vapors and mists are gone. NO PERSONS SHOULD BE ALLOWED IN THE AREA WHERE THESE PRODUCTS ARE BEING USED UNLESS EQUIPPED WITH THE SAME RESPIRATOR PROTECTION RECOMMENDED FOR THE PAINTERS.
When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

PROTECTIVE GLOVES
Wear gloves which are recommended by glove supplier for protection against materials in Section II.

EYE PROTECTION
Wear safety spectacles with unperforated sideshields.

OTHER PROTECTIVE EQUIPMENT
Use barrier cream on exposed skin.

Section IX — PRECAUTIONS

DOL STORAGE CATEGORY — See TABLE
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep away from heat, sparks, and open flame.
During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.
Consult NFPA Code. Use approved Bonding and Grounding procedures.
Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

OTHER PRECAUTIONS
These products must be mixed with other components before use. Before opening the packages, READ AND FOLLOW WARNING LABELS ON ALL COMPONENTS.
Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section X — OTHER REGULATORY INFORMATION

CALIFORNIA PROPOSITION 65
WARNING: V65V40, V65V55, and F41F65 contain a chemical(s) known to the State of California to cause cancer. POLANE® HS Plus Custom Colors and intermix colors, except F63S81, contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
The above information pertains to these products as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to these products may substantially alter the composition and hazards of the products.
Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

covers MSDS page F63J/1 and F63J/2

APPLICATION

Typical Setups

Note: Maximum total reduction is 12% by volume to maintain 2.8 VOC.

Conventional Spray:

Air Pressure	40-50 psi
Fluid Pressure	5-10 psi
Cap/Tip	.047

Airless Spray:

Pressure	2000-2800 psi
Tip	.009 - .011"

Air Assisted Airless:

Air Pressure	10-30 psi
Fluid Pressure	600-900 psi
Cap/Tip	.009 - .011"

Electrostatic Spray:

Conductivity is 0.2-0.8 megohms resistance, which is suitable for all hand-held electrostatic spray setups.

HVLP:

Air Pressure	3-5 psi
Fluid Pressure	5-10 psi
Cap/Tip	.040

Dipping, brushing or flowcoat application is not recommended.

Cleanup:

Clean tools/equipment immediately after use with Polane Reducer, MEK, MIBK, or MAK.

Follow manufacturer's safety recommendations when using any solvent.

Performance Tests

Bonderite 1000 steel panels, F63W66 catalyzed and reduced, 1.5 mils dft, 30 minutes at 180°F, 14 days air cured

Salt Spray Test	300 hours
1/8" rust creepage at scribe	
Humidity 100°F, 100% RH	300 hours
Impact Resistance, Direct	80 in lb
Impact Resistance, Reverse	80 in lb
Pencil Hardness	H
Taber Abrasion	
CS 17 wheel, 1000 g, 1000 cycles	<100 mg
Water Immersion	24 hours
Adhesion, Crosshatch	Excellent
MEK, 100 double rubs	slight burnish
Heat Resistance, Dry	250°F

Chemical Resistance

Lubricating & Cutting Oils	Excellent
Hydraulic Fluids	Excellent

SPECIFICATIONS

Product Limitations:

- *Polane HS Plus coatings must be catalyzed* with V66V55 for exterior application. Do not vary catalyst ratio. Maintain an exact ratio. The catalyst ratio has been established for optimum hardness, flexibility, gloss, chemical and solvent resistance.
- *For low gloss exterior applications,* use Polane S Plus coatings rather than lowering gloss of Polane HS Plus.
- Do not blend with polyurethane other than Polane HS Plus and S Plus for exterior applications. No other catalysts, colorants, flatting bases or reducers *are recommended because foreign* materials such as alcohols and glycols destroy performance properties. Lacquer thinners and alcohol containing solvent blends should not be used with Polane enamels.
- Organic colors have limited hiding by *themselves and must be blended with* other chromatics for use.
- Polane HS Plus coatings are not recommended for *exterior* use on wood.
- Do not spray hot. Heat shortens potlife. Do not pump catalyzed materials from drums into circulating system. *Friction heat developed by pumps* and circulation will shorten potlife.
- Protect Polane Enamels, Catalyst and Reducer from moisture as water affects potlife and properties. Store indoors.
- Do not package Polane coated products in airtight plastic bags unless completely cured. Since Polane Enamels continue to cure for several weeks, the buildup of organic solvents and reaction by-products could cause improper cure and adhesion failure in use.
- Do not exceed 1.5 mil dry film with airless or air assisted airless equipment due to sagging tendencies.
- Silver F63S65 does not offer the same color and gloss retention as other colors because of the weathering effect of aluminum pigment. Do not use for applications requiring long term color and gloss retention.
- For SILVER ONLY, use MEK as a reducer rather than MAK. The faster evaporation helps the metallic pigment orientation.
- The Clear F63V67 is intended for custom color intermixing and should not be used as a clearcoat because of its *potential for yellowing.*
- When using the VIC™ process, coatings must be packaged in phenolic lined containers to prevent discoloration.

CAUTIONS

Thoroughly review product label for safety *and cautions prior to using this product.* A Material Safety Data Sheet is available from your local Sherwin-Williams facility. Please direct any questions or comments to your local Sherwin-Williams facility.

LABEL CAUTIONS

Contents are FLAMMABLE. Vapors may cause flash fires. Keep away from heat, sparks, and open flame. During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.
SEE CONTENTS STATEMENT ON LABEL.
VAPOR HARMFUL. *Use only with adequate ventilation.* This product must be used with an appropriate catalyst. Follow the respirator requirement and *instructions on the catalyst.*
Avoid contact with eyes and skin. Wash hands after using. Keep container closed when not in use. Do *not transfer contents to other containers for storage.*
FIRST AID: IF INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet. *If on SKIN:* Wash affected area thoroughly with soap and water. Remove contaminated clothing. Launder before re-use. If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention. If SWALLOWED: Get medical attention immediately.
SPILL AND WASTE: Remove all sources of ignition. Ventilate and remove with inert absorbent. Incinerate in approved facility. Do not incinerate closed container. *Dispose of in accordance* with Federal, State, and Local regulation regarding pollution.
DELAYED EFFECTS FROM LONG TERM OVEREXPOSURE. Contains solvents which can cause permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.
This product must be mixed with other components before use. Before opening the packages, READ AND FOLLOW WARNING LABELS ON ALL COMPONENTS.
WARNING: This product contains chemicals known to the State of California to
cause cancer and birth defects or other reproductive harm.
DO NOT TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN. FOR INDUSTRIAL USE ONLY. SEE MATERIAL SAFETY DATA SHEET.
K05213 11/98

Catalyst CONTAINS ISOCYANATES. People who have chronic (long-term) lung or breathing problems or have had a reaction to isocyanates, must not be in the area where this product is being applied. Where overspray is present, a positive pressure air-supplied respirator should be worn. If unavailable, a properly fitted organic vapor/particulate respirator may be effective. Consult catalyst MSDS and product label for complete handling instructions.

Note: Product Data Sheets are periodically updated to reflect new information relating to the product. It is important that the *customer obtain the most recent Product Data* Sheet for the product being used. The information, rating, and opinions stated here pertain to the material currently offered and represent the results of tests believed to be *reliable. However, due to variations in customer handling and methods of application* which are not known or under our control, The Sherwin-Williams Company cannot make any warranties as to the end result.

Paint Mixing Guide Polane HS

White Polane	11.98 lbs/gal	1438 g/l
Catalyst	9.34 lbs/gal	1121 g/l
Reducer MAK	6.76 lbs/gal	811 g/l

To Mix: (ml		Paint (g)		Catalyst (g		Solvent (g)		Total Mass	
100		96.3		25		8.7		130	
250		240.75		62.5		21.75		325	
750		722.25		187.5		65.25		975	
1000		963		250		87		1300	
1250		1203.75		312.5		108.75		1625	
1750		1685.25		437.5		152.25		2275	
2000		1926		500		174		2600	
2250		2166.75		562.5		195.75		2925	
2750		2648.25		687.5		239.25		3575	
3000		2889		750		261		3900	

FROM : SHERWIN-WILLIAMS CEDAR FALLS FAX NO. : 319 277 6277 Aug. 22 2001 11:06AM P1

Rick

MATERIAL SAFETY DATA SHEET

15
05 00

Section 1 — PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER

15 V66W55

HMIS CODES

Health	3*
Flammability	2
Reactivity	1

PRODUCT NAME
POLANE* HS Plus Exterior Catalyst

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
101 Prospect Avenue N.W.
Cleveland, OH 44115

EMERGENCY TELEPHONE NO.
(216) 566-2917

DATE OF PREPARATION
22-AUG-01

INFORMATION TELEPHONE NO.
(216) 566-2902

Section 2 — COMPOSITION/INFORMATION ON INGREDIENTS

% by WT	CAS No.	INGREDIENT	UNITS	VAPOR PRESSURE
1	64742-95-6	Light Aromatic Hydrocarbons.		
		ACGIH TLV Not Established		3.8 mm
		OSHA PEL Not Established		
1	105-67-9	1,3,5-Trimethylbenzene		
		ACGIH TLV 25	ppm	2 mm
		OSHA PEL 25	ppm	
2	95-63-6	1,2,4-Trimethylbenzene		
		ACGIH TLV 25	ppm	2.03 mm
		OSHA PEL 25	ppm	
3	123-86-4	n-Butyl Acetate.		
		ACGIH TLV 150	ppm	10 mm
		ACGIH TLV 200	ppm STEL	
		OSHA PEL 150	ppm	
		OSHA PEL 200	ppm STEL	
0.2	822-06-0	Hexamethylene Diisocyanate (mon.)		
		ACGIH TLV 0.005	ppm	0.05 mm
		OSHA PEL Not Established		
90	28182-81-2	Hexamethylene Diisocyanate Polymer.		
		ACGIH TLV Not Established		
		OSHA PEL Not Established		

Section 3 — HAZARDS IDENTIFICATION

ROUTES OF EXPOSURE

Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

Continued on page 2

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

May cause allergic respiratory and/or skin reaction in susceptible persons or sensitization. This effect may be delayed several hours after exposure.

CANCER INFORMATION

For complete discussion of toxicology data refer to Section 11.

Section 4 -- FIRST AID MEASURES

If INHALED:	If any breathing problems occur during use, LEAVE THE AREA and get fresh air. If problems remain or occur later, IMMEDIATELY get medical attention.
If on SKIN:	Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
If in EYES:	Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED:	Do not induce vomiting. Get medical attention immediately.

FLASH POINT	LEL	UEL
117 F PMCC	0.7	7.6

FLAMMABILITY CLASSIFICATION

Combustible, Flash above 99 and below 200 F

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS

Keep containers tightly closed. Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 6 -- ACCIDENTAL RELEASE MEASURES

Continued on page 3

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate the area. All personnel in the area should be protected as in Section VIII. Cover spill with absorbent material. Deactivate spilled material with a 10% ammonium hydroxide solution (household ammonia). After 10 minutes, collect in open containers and add more ammonia. Cover loosely. Wash spill area with soap and water.

Section 7 -- HANDLING AND STORAGE

DOL STORAGE CATEGORY

2

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Contents are COMBUSTIBLE. Keep away from heat and open flame.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

Section 8 -- EXPOSURE CONTROLS/PERSONAL PROTECTION

PRECAUTIONS TO BE TAKEN IN USE

NO PERSON SHOULD USE THIS PRODUCT, OR BE IN THE AREA WHERE IT IS BEING USED, IF THEY HAVE CHRONIC (LONG-TERM) LUNG OR BREATHING PROBLEMS OR IF THEY EVER HAD A REACTION TO ISOCYANATES.

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m3 (total dust), 3 mg/m3 (respirable fraction), OSHA PEL 15 mg/m3 (total dust), 5 mg/m3 (respirable fraction).

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

Where overspray is present, a positive pressure air supplied respirator (TC19C NIOSH/MSHA approved) should be worn. If unavailable, a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2 may be effective. Follow respirator manufacturer's directions for use. Wear the respirator for the whole time of spraying and until all vapors and mists are gone. NO PERSONS SHOULD BE ALLOWED IN THE AREA WHERE THIS PRODUCT IS BEING USED UNLESS EQUIPPED WITH THE SAME RESPIRATOR PROTECTION RECOMMENDED FOR THE PAINTERS.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

Continued on page 4

OTHER PROTECTIVE EQUIPMENT
Use barrier cream on exposed skin.
OTHER PRECAUTIONS
This product must be mixed with other components before use. Before opening the packages, READ AND FOLLOW WARNING LABELS ON ALL COMPONENTS.
Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 9 -- PHYSICAL AND CHEMICAL PROPERTIES

PRODUCT WEIGHT	9.34 lb/gal	1119 g/l
SPECIFIC GRAVITY	1.12	
BOILING POINT	255 - 360 F	123 - 182 C
MELTING POINT	Not Available	
VOLATILE VOLUME	12 %	
EVAPORATION RATE	Slower than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	N.A.	

VOLATILE ORGANIC COMPOUNDS (VOC Theoretical)

0.93 lb/gal	111 g/l	Less Federally Exempt Solvents
0.93 lb/gal	111 g/l	Emitted VOC

Section 10 -- STABILITY AND REACTIVITY

STABILITY -- Stable
CONDITIONS TO AVOID
None known.
INCOMPATIBILITY
Contamination with Water, Alcohols, Amines and other compounds which react with isocyanates, may result in dangerous pressure in, and possible bursting of, closed containers.
HAZARDOUS DECOMPOSITION PRODUCTS
By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Nitrogen, possibility of Hydrogen Cyanide
HAZARDOUS POLYMERIZATION
Will not occur

ed carcinogen.
Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver, urinary, blood forming and reproductive systems.
Persons sensitive to isocyanates will experience increased allergic reaction on repeated exposure.
Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

TOXICOLOGY DATA

CAS No.	Ingredient Name				
64742-95-6	Light Aromatic Hydrocarbons.				
		LC50	RAT	4HR	Not Established
		LD50	RAT		Not Established

Continued on page 5

108-67-8	1,3,5-Trimethylbenzene				
	LC50	RAT	4HR	Not Established	
	LD50	RAT		Not Established	
95-63-6	1,2,4-Trimethylbenzene				
	LC50	RAT	4HR	Not Established	
	LD50	RAT		Not Established	
123-86-4	n-Butyl Acetate.				
	LC50	RAT	4HR	2000	ppm
	LD50	RAT		13100	mg/kg
822-06-0	Hexamethylene Diisocyanate (mix.)				
	LC50	RAT	4HR	Not Established	
	LD50	RAT		738	mg/kg
28182-81-2	Hexamethylene Diisocyanate Polymer				
	LC50	RAT	4HR	Not Established	
	LD50	RAT		Not Established	

Section 12 -- ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

No data available.

Section 13 -- DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

Section 14 -- TRANSPORT INFORMATION

No data available.

Section 15 -- REGULATORY INFORMATION

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
95-63-6	1,2,4-Trimethylbenzene	2	

CALIFORNIA PROPOSITION 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

16

Section 16 -- OTHER INFORMATION

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

APPENDIX D

PAINT USAGE AND VOLATILE ORGANIC COMPOUNDS EMISSIONS CALCULATIONS

PAINT USAGE AND VOLATILE ORGANIC COMPOUNDS EMISSIONS CALCULATIONS

This appendix contains the Air Resources Board (ARB) staff evaluation of the test results submitted by the Iowa Waste Reduction Center (IWRC) to assess the effectiveness of the Laser Touch model LT-B512 assistive targeting device in reducing air pollutant emissions from coating operations. The ARB staff used the provided field data for the analysis.

Background

In October 1999, testing was conducted to evaluate the environmental benefits of the Laser Touch model LT-B512. The test was performed under specific conditions at the IWRC's Painting and Coating Compliance Enhancement (PAC2E) facility in accordance with ASTM Method D 5286-95 "Standard Test Methods for Determination of Transfer Efficiency Under General Production Conditions for Spray Application of Paints." Several painters with varying degrees of experience were asked to coat test parts as they normally would to establish their unassisted baseline. The painters were then trained on the use of the Laser Touch model LT-B512 and asked to coat the same type of parts assisted by the targeting device.

The Laser Touch model LT-B512 was tested under conditions recommended by Laser Touch and Technologies, LLC, the equipment manufacturer. The test parts painted were a uniform, solid material. The parts were 121.9 centimeters (48 inches) long, 101.6 centimeters (40 inches) wide and 1.5 to 1.7 millimeters (0.060 to 0.066 inches) thick. The manual spray gun used by all painters was an Accuspray model 19 high-volume low pressure (HVLP) pressure feed gun equipped with a 0.9 millimeter (0.036 inch) fluid tip, a 0.9 millimeter (0.036 inch) fluid needle and a #7 air cap.

Volatile Organic Compound Emissions Calculations

Laser Touch and Technologies, LLC selected Sherwin-Williams Polane HS Plus white single stage polyurethane enamel as the test coating. The coating was mixed per manufacturer's recommendation at a ratio of 3:1:0.48 with Sherwin-Williams Catalyst V66V55 and Sherwin-Williams Reducer MAKR6K30. The volatile organic compound (VOC) contents of the aforementioned mix are 2.8, 0.93, and 6.79 lbs/gallon respectfully. The pounds of VOC as applied per gallon were calculated as shown in Table D-1.

Table D-1. VOC "As Applied" Emissions Calculations

	VOC Content [lbs/gallon]	x	Mix Ratio	=	Lbs VOC/gallon
Enamel Coat	2.8	x	3	=	8.4
Catalyst	0.93	x	1	=	0.93
Reducer	6.76	x	0.48	=	3.24
Total			4.48		12.57
	Total VOC	¸	**Total Mix Ratio**	**=**	**Lbs VOC as applied/gallon**
	12.57	¸	4.48	=	2.8

The test consisted of twelve painters recruited from local industries, who had varying degrees of experience (see Table D-2) and training, but none of the participating painters had any previous experience with the Laser Touch model LT-B512. Although twelve painters participated in the test, only ten produced sufficient valid test parts for data analysis.

There were two runs for each painter; one run performed without the targeting device (unassisted), and one run using the Laser Touch model LT-B512 (assisted). Each run consisted of seven parts. A total of fourteen parts were coated.

Table D-2. Painters' Experience Levels

Painter ID #	Years Work Experience	Training
1	2	Technical school
2	2	No formal training
3	3	No formal training
4	1	No formal training
5	1	No formal training
6	20	No formal training
8	20	Vendor paint school
9	3	No formal training
10	20	No formal training
11	18	Electrostatic – Airless
AVG	9	

Transfer Efficiency Calculations

Transfer efficiency (TE) was calculated using the initial and final weights of the paint cup, as well as the initial and final weights of the parts. Data analysis was verified by the ARB Monitoring and Laboratory Division and Precertification staff. The TE (%) for each painter was calculated using the equation shown below:

$$\text{TE (\%)} = \frac{\text{(weight gain of each part) x 100}}{\text{(weight of paint solids sprayed)}}$$

The values for percent change between the unassisted and assisted TE were calculated using the equation shown below:

TE Change (%) = Assisted – Unassisted

The summary of the TE results for each painter is shown in Table D-3. Numbers annotated in "()" are negative values.

Table D-3. Summary TE Data

Painter ID #	Unassisted TE	SD	Assisted TE	SD	% TE Change
1	70.1	2.5	78.9	1.2	8.8
2	72.9	0.7	76.8	0.8	3.9
3	71.1	2.4	73.1	0.7	2.0
4	62.2	1.9	71.6	1.1	9.4
5	71.3	0.6	75.5	0.9	4.2
6	80.5	1.2	80.0	0.7	(0.5)
8	75.7	0.9	80.9	1.2	5.2
9	76.1	1.4	75.2	1.5	(0.9)
10	69.6	1.2	76.2	0.9	6.6
11	62.0	1.5	75.7	1.2	13.7
AVG	71.2	1.4	76.4	1.0	5.2

Although ASTM Method D-5286-95 does not include parameters for determining the reduction in VOC emissions from coating operations, the associated VOC decreases for these tests were estimated based on the difference in the amount of applied paint. The paint differences were calculated from the available data provided in the "Full" part results.

Paint Usage and VOC Emissions Calculations

The paint difference and percent change of paint usage were calculated using the equations below:

Paint Usage Difference = (Assisted Total Paint Used – Unassisted Total Paint Used)

$$\text{Percent Change in Paint Usage} = \frac{(\text{Assisted Total Paint Used} - \text{Unassisted Total Paint Used})}{\text{Unassisted Total Paint Used}} \times 100$$

The values for the corresponding VOC emissions from paint usage were derived from the equations below:

Unassisted VOC Emissions (lbs) = Unassisted Total Paint Used x lbs VOC as applied/gallon*

* = Value derived from Table D-1, VOC "As Applied" Emissions Calculations

Assisted VOC Emissions (lbs) = Assisted Total Paint Used x lbs VOC as applied/gallon*

* = Value derived from Table D-1, VOC "As Applied" Emissions Calculations

$$\text{Percent Change in VOC Emissions} = \frac{(\text{Assisted VOC Emissions} - \text{Unassisted VOC Emissions})}{\text{Unassisted VOC Emissions}} \times 100$$

The summary of the aforementioned calculations derived from the "Full" part is shown in Table D-4. Numbers annotated in "()" are negative values.

Table D-4. Summary Paint Usage and VOC Reduction Evaluation From "Full" Data

Painter ID#	Unassisted TE (%)	Assisted TE (%)	TE Change (%)	Unassisted total paint used (gallons)	Assisted total paint used (gallons)	Paint usage difference (gallons)	Change in paint usage (%)	Unassisted VOC emissions (lbs)	Assisted VOC Emissions (lbs)	Change in VOC emissions (lbs)	Change VOC emissions (%)
1	70.1	78.9	8.8	0.224	0.244	0.020	9	0.63	0.68	0.06	9
2	72.9	76.8	3.9	0.183	0.175	(0.008)	(4)	0.51	0.49	(0.02)	(4)
3	71.1	73.1	2.0	0.216	0.161	(0.055)	(25)	0.60	0.45	(0.15)	(25)
4	62.2	71.6	9.4	0.284	0.242	(0.042)	(15)	0.80	0.68	(0.12)	(15)
5	71.3	75.5	4.2	0.232	0.178	(0.054)	(23)	0.65	0.50	(0.15)	(23)
6	80.5	80.0	(0.5)	0.212	0.182	(0.030)	(14)	0.59	0.51	(0.08)	(14)
8	75.7	80.9	5.2	0.247	0.200	(0.047)	(19)	0.69	0.56	(0.13)	(19)
9	76.1	75.2	(0.9)	0.252	0.197	(0.055)	(22)	0.71	0.55	(0.15)	(22)
10	69.6	76.2	6.6	0.193	0.166	(0.027)	(14)	0.54	0.46	(0.08)	(14)
11	62.0	75.7	13.7	NA	NA	NA	NA	NA	NA	NA	NA
AVG	71.2	76.4	5.2	0.227	0.194	(0.033)	(15)	0.64	0.54	(0.09)	(15)

NA – Data not available

Summary

The ARB evaluation of the Laser Touch model LT-B512 suggests a general improvement of TE. Test results revealed an average 5.7 percent increase in TE over the unassisted TE. Data from the evaluation yielded corresponding average reduction of 15% of paint usage and VOC emissions.

It should be noted that this device is effective at reducing VOC emissions only to the extent to which the painter provides corrective action in response to the assistive feedback of the Laser Touch model LT-B512.

APPENDIX E

LASER TOUCH AND TECHNOLOGIES PART LIST FOR THE MODEL LT-B512

3.1.3

LASER TOUCH AND TECHNOLOGIES
PART LIST FOR THE MODEL LT-B512

QTY	DESCRIPTION	
1	BATTERY HOLDER	-CUSTOM MADE
1	DELRIN BODY	-CUSTOM MACHINED
1	DELRIN UPPER ADJUSTER	-CUSTOM MACHINED
1	LITHUIM BATTERY	-OTC
1	BEAM SPLITTER	-CUSTOM MADE
1	LASER MODULE	-CUSTOM ORDER
1	SET OF STICKERS	-CUSTOM MADE
1	ANTI-GLARE LENSE	-CUSTOM MADE
1	DELRIN SPACER	-CUSTOM MACHINED
1	MOUNTING STUD	-OTC
1	BLOWMOLDED CASE	-OTC
1	SET OF FOAM INSERTS	-CUSTOM MADE

State of California
AIR RESOURCES BOARD
Executive Order G-096-029-037
Equipment Precertification of
Laser Touch and Technologies, LLC's
Laser Touch Model LT-B512

WHEREAS, the Air Resources Board (ARB) has established a statewide Equipment and Process Precertification (Precertification) Program to assist air pollution control and air quality management districts in meeting the requirements of the Air Pollution Permit Streamlining Act (California Health and Safety Code section 42320-42323);

WHEREAS, the ARB has been given the authority under California Health and Safety Code section 39620 to develop and implement the Precertification Program, which consists of a preliminary engineering evaluation of equipment or processes and provides recommended operating conditions;

WHEREAS, this Precertification does not constitute an air pollution permit or eliminate the responsibility of the end user to comply with all federal, state, and local laws, rules, and regulations;

WHEREAS, Laser Touch and Technologies, LLC has requested a Precertification of the Laser Touch Model LT-B512, an add-on peripheral device for paint spray guns;

WHEREAS, Laser Touch and Technologies, LLC identified the following Precertification standard regarding the performance of the Laser Touch Model LT-B512: when using Laser Touch Model LT-B512 with an Accuspray Model 19 high volume, low pressure paint spray gun, in accordance with the Laser Touch manufacturer's instructions, the volume of a single-stage polyurethane enamel was decreased by an average of 15 percent therefore a corresponding volatile organic compound emissions reduction of an average 15 percent can be assumed;

WHEREAS, this Precertification is valid only when the Laser Touch Model LT-B512 is manufactured, installed, operated, and maintained in accordance with manufacturer's instructions;

WHEREAS, I find that the Applicant, Laser Touch and Technologies, LLC, has met the requirements specified in Title 17 California Code of Regulations section 91400 which incorporates the ARB's Criteria for Equipment Precertification (adopted June 14, 1996) and has satisfactorily demonstrated through independent testing that the Laser Touch Model LT-B512 described in the application meets the identified Precertification standards;

WHEREAS, this performance Precertification is subject to all conditions and requirements of the ARB's Criteria for Equipment Precertification, including the provisions relating to suspension and revocation;

WHEREAS, marketing of this device using an identification other than that shown in this Executive Order shall be prohibited unless prior approval is obtained from the ARB. Any oral or written references to this Executive Order or its content by Laser Touch and Technologies, LLC, its principals, agents, employees, distributors, dealers, or other representatives must include the disclaimer that this Executive Order is not an endorsement or approval of the Laser Touch Model LT-B512. No claim shall be made, such as "Approved by the Air Resources Board," with respect to any advertising or other oral or written communication. It is only a finding that the Laser Touch Model LT-B512 meets the identified Precertification standard, as specified in the evaluation report for application number 02260101;

WHEREAS, this performance Precertification shall expire three years from the date of this Executive Order, unless renewed;

NOW THEREFORE, IT IS HEREBY ORDERED, that the performance Precertification, Executive Order G-096-029-037, executed at Sacramento, California this 14th day of February, 2002, is hereby granted.

Michael P. Kenny
Executive Officer

/S/

By: Peter D. Venturini, Chief
Stationary Source Division